

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-7. (CANCELED)

8. (Withdrawn) A system comprising:

a scanning device;

a first plate module configured to couple to the scanning device at a known orientation, the first plate module also configured to receive a first physical model of a first dentition of a patient and to position the first physical model within a first coordinate system, the first plate module including a plurality of alignment spheres arranged on the first plate module; and

a second plate module configured to receive a second physical model of a second dentition of the patient and to position the second physical model within a second coordinate system, the second plate module including a plurality of alignment spheres, the second plate module configured to couple to the scanning device at a known orientation;

wherein the second plate module is configured to operably couple to the first plate module using an articulation device to form a combined apparatus within the first coordinate system, the second plate module being moveable with respect to the first plate module when forming the combined apparatus, and wherein the combined apparatus can be coupled to the scanning device.

9. (Withdrawn) The system of claim 8, further comprising:

a base plate module configured to couple to the scanning device, the base plate module defining at least a first alignment channel.

10. (Withdrawn) The system of claim 9, wherein the base plate module is configured to receive the first plate module and the first alignment channel is configured to receive at least a first of the alignment spheres of the first plate module.

11. (Withdrawn) The system of claim 10, wherein the first alignment channel is configured to receive at least the first and a second of the alignment spheres of the first plate module.
12. (Withdrawn) The system of claim 10, wherein the base plate module is configured to receive the first plate module when the first plate module and the second plate module are coupled together to form the combined apparatus.
13. (Withdrawn) The system of claim 9, wherein the base plate module is configured to receive the second plate module and the first alignment channel is configured to receive at least a first of the alignment spheres of the second plate module.
14. (Withdrawn) The system of claim 9, wherein the base plate module also defines a second alignment channel orthogonal to the first alignment channel.
15. (Withdrawn) The system of claim 14, wherein the first plate module includes first and second alignment spheres arranged to cooperatively mate with the first alignment channel and the first plate module further includes a third alignment sphere arranged to cooperatively mate with the second alignment channel to position the first plate module at a known orientation.
16. (Withdrawn) The system of claim 8, wherein the first dentition of the patient represents an upper set of teeth of the patient.
17. (Withdrawn) The system of claim 8, wherein the second dentition of the patient represents a lower set of teeth of the patient.
18. (Withdrawn) The system of claim 8, wherein the first physical model includes from at least one member of the group consisting of a plaster mold, a wax mold, and a plastic mold.
19. (Withdrawn) The system of claim 8, wherein the alignment spheres of the first plate module are arranged within a common plane.
20. (Withdrawn) A method comprising:

arranging a first physical model on a scanning device, the first physical model associated with a first alignment sphere, a second alignment sphere, and a third alignment sphere;

scanning a surface of the first physical model along a first scan line to find an edge of the first physical model at a first edge point;

scanning the surface of the first physical model along a second scan line to find the edge of the first physical model at a second edge point, the second scan line being spaced a distance from the first scan line;

determining a first vector crossing the first edge point and the second edge point, the first vector having a first direction;

locating the first alignment sphere at a first location , the first location being located along the first vector; and

scanning the first alignment sphere to obtain positional data.

21. (Withdrawn) The method of claim 20, further comprising:

locating the second alignment sphere based on the first vector and the location of the first alignment sphere.

22. (Withdrawn) The method of claim 20, further comprising:

locating the third alignment sphere based on at least the first vector and the location of the first alignment sphere.

23. (NEW) A system for generating an electronic model for a dental impression having a common coordinate system, the system comprising:

two scanning apparatus for positioning physical objects within a scanning device when generating an electronic model corresponding to each of the physical objects, each scanning apparatus including a plurality of alignment spheres; and

a data processing system for processing the electronic models corresponding to each of the physical objects to possess polygonal mesh representations of the physical objects within a common coordinate system; and

wherein the two scanning apparatus include a scanning base plate module for coupling the scanning apparatus to the scanning device and physical model plate modules for coupling the

physical objects to the scanning base plate module within a coordinate system of the scanning device.

24. (NEW) The system according to claim 23, wherein the two scanning apparatus also comprise a reference point item used to locate a known position on the scanning apparatus to perform data processing operations associated with transforming position location data into the common coordinate system

25. (NEW) The system according to claim 23, wherein the scanning base plate module comprises an x-axis alignment channel and y-axis alignment channel; and the physical model plate modules comprise the plurality of alignment position spheres, the plurality of alignment spheres are coupled to the x-axis alignment channel and the y-axis alignment channel to position the physical model plate module at a known location relative to the scanning base plate module.

26. (NEW) The system according to claim 23, wherein the reference point item corresponds to one of the plurality of alignment spheres.

27. (NEW) The system according to claim 23, wherein the two scanning apparatus are combined into a composite scanning apparatus in which two corresponding physical objects are positions relative to each other at a desired position, one of the two scanning apparatus being coupled to the scanning device and the other of the two scanning apparatus being position within space of the scanning device according to the common coordinate system.

28. (NEW) A method for generating an electronic model for a dental impression having a common coordinate system, the method comprising:

mounting physical models onto corresponding scanning apparatus, the scanning apparatus positioning the physical models within a coordinate system of a scanning device, each of the scanning apparatus including a plurality of alignment spheres and each of the scanning apparatus coupling the physical models to a scanning base plate module of the scanning device;
generating an electronic model for each physical model, the electronic models correspond to polygonal mesh representations of scanned position data;

positioning each of the scanning apparatus into a desired position in which the physical models are positioned relative to each other as the objects corresponding to the physical models interact with each other to generate a composite scanning apparatus;

scanning a reference point on one or more scanning apparatus within the combined scanning apparatus that are not coupled to the scanning device; and

transforming the electronic models corresponding to the objects having scanning apparatus not coupled to the scanning device to generate a composite electronic model in a common coordinate system.

29. (NEW) The method according to claim 28 wherein the method further comprises generating a position transformation vector using the scanned reference point data, the position transformation vector being used to transform the electronic models into a common coordinate system.